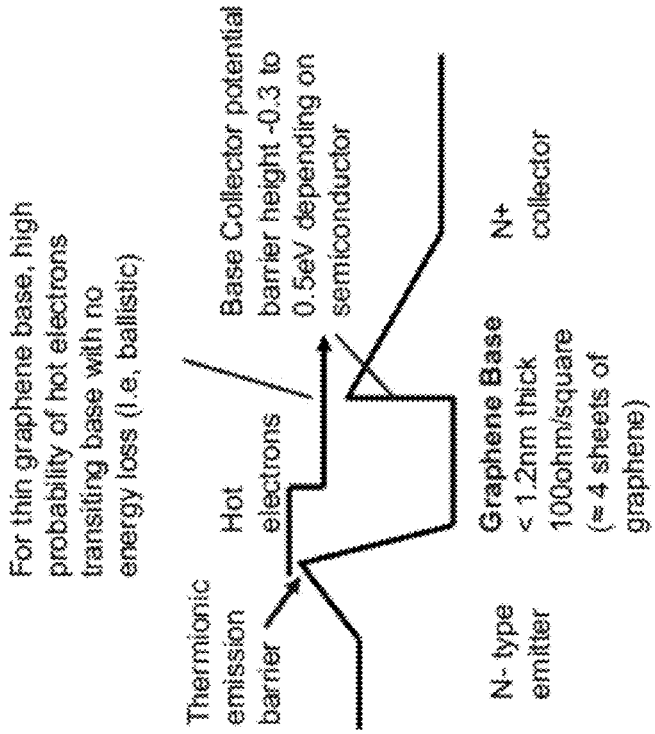
For thin graphene base, high probability of hot electrons transiting base with no energy loss (i.e, ballistic)
Thermionic emission barrier
Hot electrons
Base Collector potential barrier height ~0.3 to 0.5eV depending on semiconductor
N- type emitter
Graphene Base < 1.2nm thick 100ohm/square (≈ 4 sheets of graphene)
N+ collector

FIG. 1B

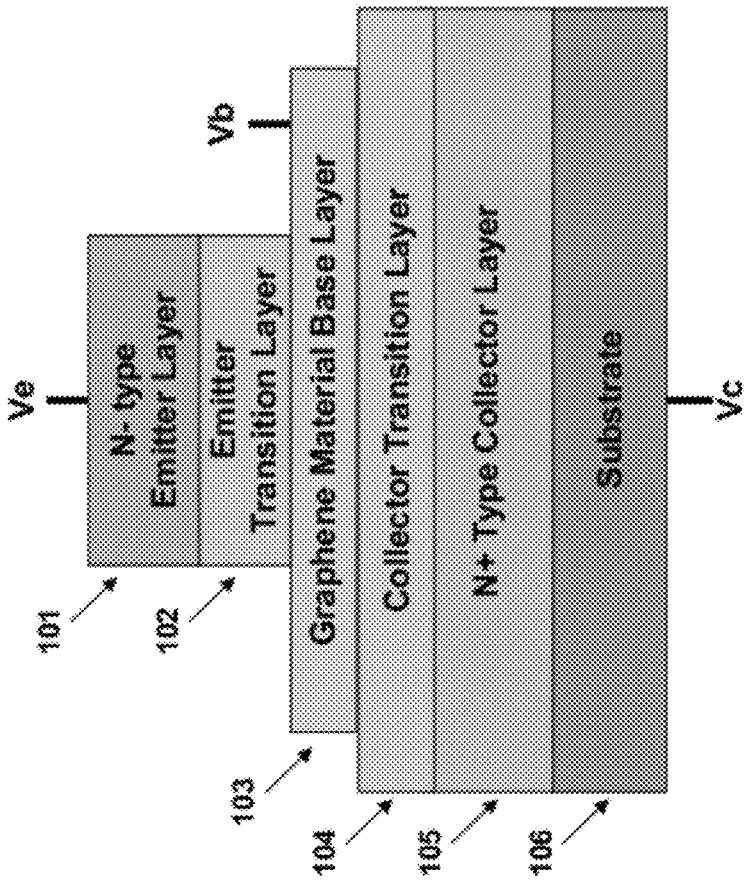
Ve
Vb
Vc
N- type Emitter Layer
Emitter Transition Layer
Graphene Material Base Layer
Collector Transition Layer
N+ Type Collector Layer
Substrate
101
102
103
104
105
106

FIG. 1A